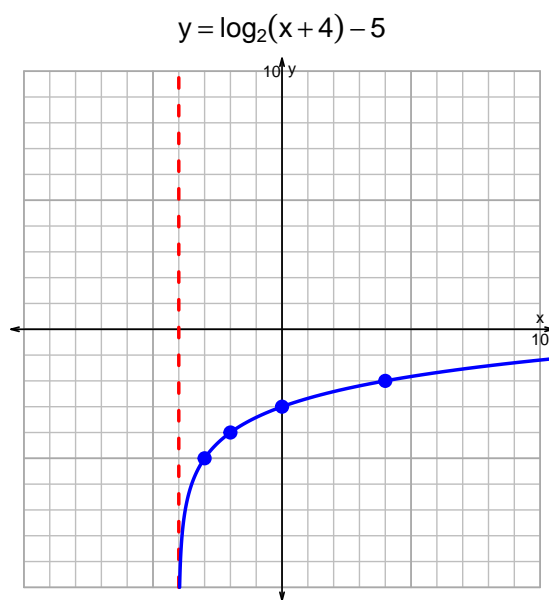
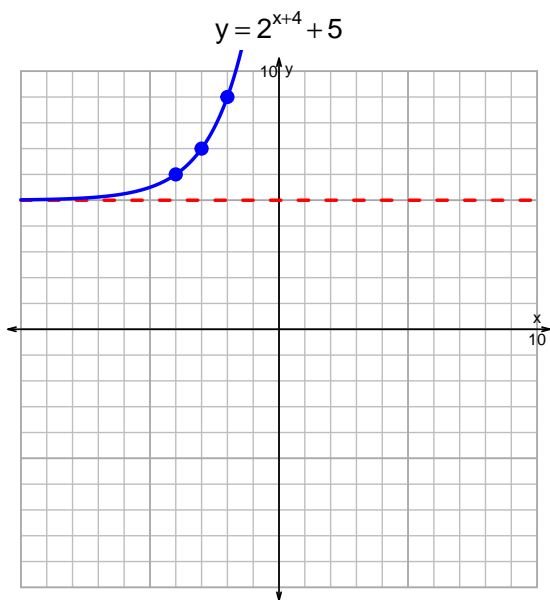


Name: _____

Date: _____

s18: EXP LOG (SLTN v309)

1. (10 pts) Graph $y = 2^{x+4} + 5$ and $y = \log_2(x+4) - 5$ on the grids below. Also, draw any asymptotes with dashed lines.



Somewhat useful hint: $2^3 = 8$, and thus $\log_2(8) = 3$.

2. (10 pts) Write (but do not evaluate) the solution to the equation below by writing a logarithmic expression. Please do not do any arithmetic; just move numbers around.

$$13 = \left(\frac{3}{5}\right) \cdot 10^{-7t/4}$$

Divide both sides by $\frac{3}{5}$.

$$\frac{13 \cdot 5}{3} = 10^{-7t/4}$$

Take log, base 10, of both sides.

$$\log_{10} \left(\frac{13 \cdot 5}{3} \right) = \frac{-7t}{4}$$

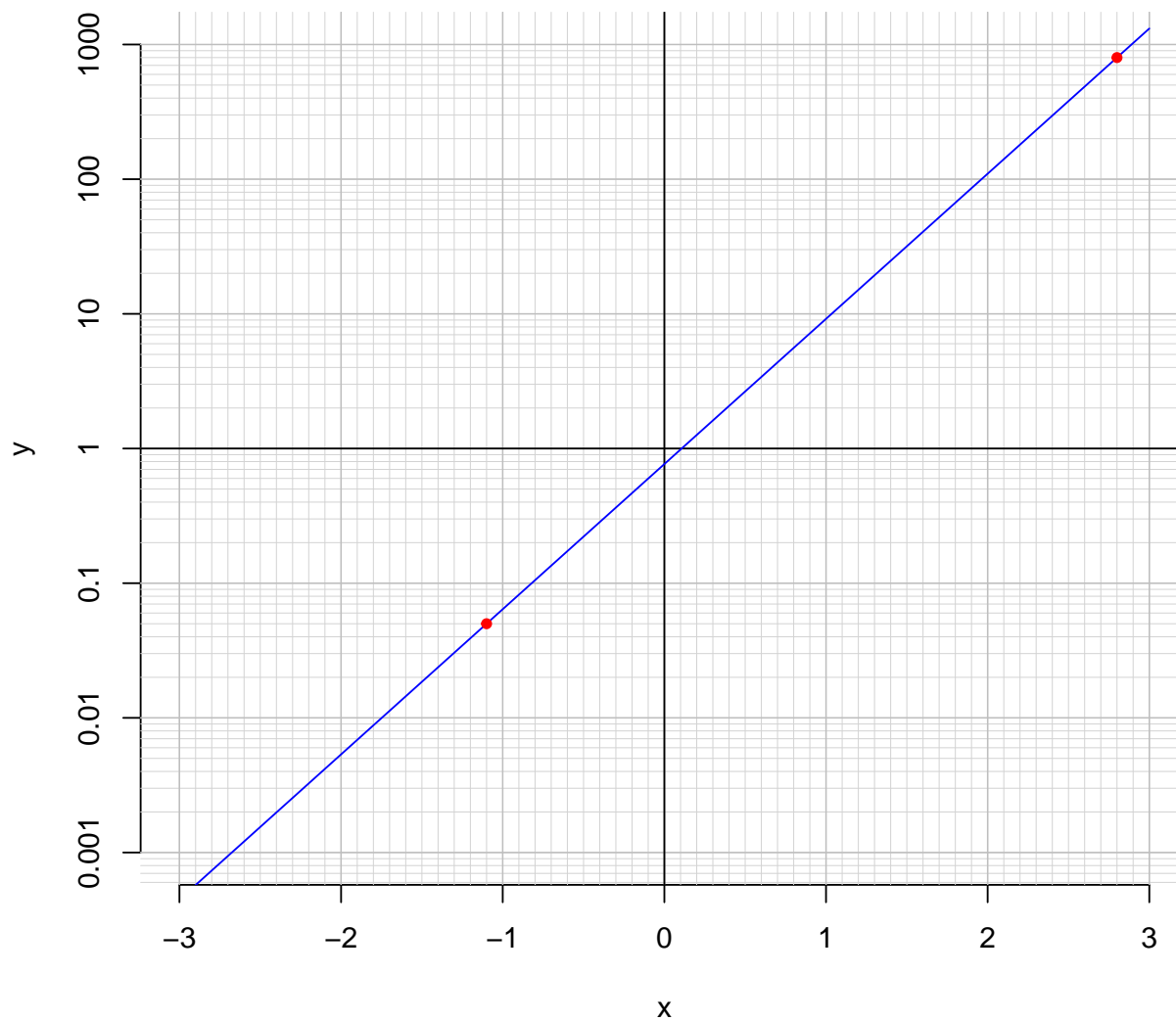
Divide both sides by $\frac{-7}{4}$.

$$\frac{-4}{7} \cdot \log_{10} \left(\frac{13 \cdot 5}{3} \right) = t$$

Switch sides.

$$t = \frac{-4}{7} \cdot \log_{10} \left(\frac{13 \cdot 5}{3} \right)$$

3. (10 pts) An exponential function $f(x) = 0.767 \cdot e^{2.48x}$ is graphed below on a semi-log plot.



- a. Using the plot above, evaluate $f(-1.1)$.

$$f(-1.1) = 0.05$$

- b. The inverse function is logarithmic.

$$f^{-1}(x) = \frac{1}{2.48} \cdot \ln\left(\frac{x}{0.767}\right)$$

Using the plot above, evaluate $f^{-1}(800)$.

$$f^{-1}(800) = 2.8$$